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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/822,831	04/02/2001	George Zheng Chen	P 0280083 PJS/ALP/P8339US	8466

7590 06/09/2005

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EXAMINER	
CREPEAU, JONATHAN	
ART UNIT	**PAPER NUMBER**
1746	

DATE MAILED: 06/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/822,831	CHEN ET AL.	
	Examiner	Art Unit	
	Jonathan S. Crepeau	1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24 and 26* is/are pending in the application.

4a) Of the above claim(s) *1-16* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17-24 and 26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 17, 2005 has been entered.

This Office action addresses claims 1-24 and 26. Claims 1-16 remain withdrawn from consideration. The declaration under 37 CFR 1.132 has been considered and is persuasive in overcoming the outstanding 102 rejection over Niu. However, claims 17-24 and 26 are newly rejected herein. This action is non-final.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 17 is rejected under 35 U.S.C. 102(b) as being anticipated by Fan et al (*Synthetic Metals,* 1999). The reference is directed to carbon nanotube (CNT)-polypyrrole (PPY) composites. The composites are made by an *in situ* polymerization method which results in a product having individual nanotubes coated by PPY (see column 2, first full paragraph). As such, the subject matter of claim 17 is anticipated.

4. Claim 17 is rejected under 35 U.S.C. 102(a) or (b) as being anticipated by Chen et al (*Advanced Materials,* 2000). The reference is directed to CNT-PPY composites. The composites are made by an *in situ* polymerization method which results in a product having individual nanotubes coated by PPY. As such, the subject matter of claim 17 is anticipated.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 18-24 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niu (U.S. Patent 6,205,016) in view of Chen et al. or Fan et al.

Niu is directed to an electrochemical capacitor comprising two composite electrodes, each consisting of carbon nanotubes and a conductive polymer (see col. 6, lines 47-50; col. 7, lines 11-15; col. 8, lines 17-21). Regarding claims 18, 19, and 26, conducting members are in contact with the composites (see Fig. 1). An electrolyte separates the first and second electrodes (see col. 9, lines 37-47). Regarding claim 20, the electrically conductive polymers are selected from polyaniline, polypyrrole, polythiophene, and their derivatives (see col. 9, line 5). Regarding claims 21 and 22, the nanotubes may be non-ionized or negatively ionized (i.e., oxidized; see col. 14, lines 32-42). Regarding claim 23, the composites are in the form of "thin films" on the conducting members (see col. 9, lines 10-15). Regarding claim 24, the capacitor comprises a cylindrical shape with an insulating member between the rolled electrodes (see col. 11, lines 23-36).

The reference does not expressly teach the process of making the composites as recited in claims 17, 18, and 26, nor the structure implied by the process steps.

As set forth above, both Chen et al. and Fan et al. teach a CNT-PPY composite made by an *in-situ* polymerization process.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to make the composites of Niu by the processes of Chen or Fan. Regarding Chen, in the last paragraph of the article, the reference teaches that a CNT-PPY composite has been synthesized that "has a high

concentration of well-dispersed nanotubes that are wetted by the continuous polymer phase." Further, Chen et al. disclose and teach "the preparation of a remarkably uniform PPy coating on individual CNTs, which promotes controlled modification of the outer surface of CNTs to provide selectable functionalities." As such, this would motivate the artisan to form the composite of Niu by the process of Chen. Further, Chen teaches that "simple ECPs show interesting physicochemical properties exploitable for batteries, sensors, light-emitting diodes, and electrochromic displays." Thus, Chen also suggests using the material in a device such as a capacitor.

Regarding the Fan reference, this reference teaches that the conductivity of the CNT-PPY composite is greater than the conductivity of PPY. Further, the reference also contemplates the use of the material in certain devices, teaching that "conducting polymer microtubes have attracted much attention because of the their applications in electronic and electrooptical devices." As such, the artisan would also be motivated by Fan to make the composite of Niu by an *in situ* polymerization process, and would have a reasonable expectation of success in doing so.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr, can be reached at (571) 272-1414. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jonathan Crepeau
Primary Examiner
Art Unit 1746
June 7, 2005